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amateur radio

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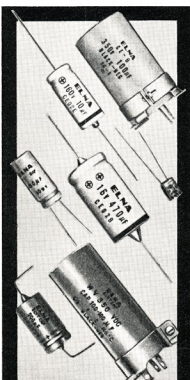
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FEDERAL COMMENT

ON PROJECT AUSTRALIS, by John Battrick, VK3OR

I guess your first reaction to this Federal Comment is why is the W.I.A.'s I.A.R.U. Region 3 Association Director commenting on Project Australis? There are several reasons for my doing so.

Firstly, as you know this current satellite project—known as AO-B (AMSAT-OSCAR B) is a combined effort between Region 1, Region 2, and Region 3 Amateurs. Certainly not on an official regional basis, but the **launch** of the second of the AMSAT series of Amateur Radio spacecraft experiments (the sixth of the widely-known OSCAR series) and the **specification** of the general requirements necessary for the design, fabrication and test of the spacecraft is the responsibility of the U.S.A.-based Radio Amateur Satellite Corporation.

The design and fabrication of a translator with an uplink frequency in the 432 MHz. band and a downlink frequency in the 144 MHz. band is being undertaken in Germany, and is referred to as the DJ4ZC experiment. Conversely, the design and fabrication of a translator with an uplink frequency in the 144 MHz. band and a downlink frequency in the 432 MHz. band is being undertaken in Australia and is the activity being undertaken by the W.I.A. Project Australis Group. So the ultimate package envisaged at the moment will fly and operate as a result of a combined effort by Amateurs in all of the regions of the I.T.U.

However, that is not the real reason why I comment, although it is certainly an aspect of the activity which I believe to be most important; the next Amateur satellite will be a "talk-through" satellite and it will be operable as a result of this combined effort of Amateurs across the world! The real reason is, that at its last meeting the Federal Executive of the W.I.A. appointed me to the position of W.I.A. FEDERAL OSCAR CO-ORDINATOR.

This office was formerly held by Richard Tonkin in his capacity as the

Chairman of the Project Australis Group. Richard and the members of his group (Les Jenkins, VK3ZBJ, who builds the translators; Peter Hammer, VK3ZPI, who builds the telemetry; Harold Hepburn, VK3AFQ, who handles procurement and builds sub-systems; Derek Brumley, VK3AVW, who is group treasurer; Edwin Shoell, VK5NZ, who assists with design), yes, that is about all the "group" comprises; these fellows asked the Institute for some assistance with co-ordination, publicity, administration, etc., and for some reason requested my assistance.

The Federal Executive discussed the matter with Richard and myself and all agreed that the two functions should be separated, that of the chairman of the Project Australis Group from that of the W.I.A. Federal Co-ordinator. So Richard and I now work together, and effect the liaison between the group responsible for the design and fabrication of the spacecraft, and the Amateurs of Australia and the world who we hope will use the ultimate system when it flies. So my first real job in my new position is to report briefly to you on the progress of the project.

At the time of reading this, a prototype translator will have been sent to AMSAT in U.S.A. for testing. It has been thoroughly tested in Melbourne, and meets the published specifications. Other prototype modules have been in operation as repeaters in Melbourne, and also will be flown to 100,000 feet on HIBAL balloon launches from Mildura during March. In addition to this prototype testing, the actual flight package will be completed and sent to the U.S.A. during March this year. This package will contain the translator, the command system and the telemetry systems.

The main problems of course in a combined experiment like this are the "interface" requirements—that is the physical and electrical specifications necessary so that the W.I.A. part, and the DJ4ZC part, and the launch vehicle

all fit together so the final package flies and works. Many skeds between the Project Australis Group and AMSAT have been undertaken and much correspondence has been entered into in order to actually finalise the specifications, especially interface specifications.

I mention this to point out that this is not a simple experiment like the previous Oscar 5, but a complex affair needing intense and exact co-ordination across the world. The Federal Executive of the W.I.A. believes that the people engaged at the design and fabrication level had done an outstanding job, but they don't have much time left to report to you, the members of the W.I.A. Any hour spent in writing reports, preparing articles, etc., leaves less time to draw up printed circuit boards or fit large quantities of ICs in confined spaces. As the AMSAT boys require the space hardware about now, the group has concentrated its limited resources of private time on the actual building of the spacecraft package.

My function will be to assist them with what they do not have time to do. I hope to feed information to your State Co-ordinators regularly, to other Amateur Societies, and generally assist in the overall co-ordination.

Of course, I have another function. The W.I.A. is financing this Project. To date about \$1,200 has been spent, about \$24,000 worth of components has been donated and installed, and we require by the end of March a further \$2,000 cash. May I make a personal plea for you as individual members to donate, and for you as members of a Division to direct your Councils to donate as your resources allow to a project which will, I believe, achieve more to raise the status of the W.I.A. and the Amateur Service generally than any other single activity undertaken during the long history of this Institute. I am pleased to have been asked to assist. **Will you also please assist?**

COUNTER USED FOR FREQUENCY MEASUREMENT

PART ONE—GENERATION OF TIME INTERVALS

ROBERT H. BLACK,* M.D., VK2QZ

Frequency is the expression of the number of events occurring per unit of time. A previous article (Black, 1970) described a method of counting the events; the present article describes the generation of accurate time intervals using a 100 KHz. crystal oscillator and a series of binary coded decimal frequency dividers. This method of frequency division has been found to be more reliable than one using multi-vibrators, particularly at pulse intervals of 0.1 sec. and longer.

The diodes and 300 pF. capacitors come "free" on the boards, as may some of the resistors. Each decade is built on a particular type of board which had transistors mounted along the side—this saves a certain amount of drilling time. The whole timing unit will cost about \$20, power being obtained from a second regulated supply.

Using 083 transistors this circuit will divide appropriate pulses arriving one million times per second and this pro-

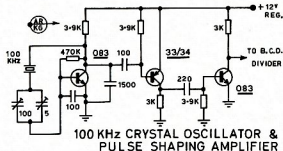
perty is used for frequency division of the input signal when its frequency is greater than, say, one or two hundred thousand (and up to 1 million) times per second. The pulse shaping amplifier and the dividing decade are shown beside the time unit in the photograph (the amplifier being the same as the one following the crystal oscillator except for 3.5 mH. RFC in the collector circuits on the transistor side of the 3K resistors). If you want a significant last digit (± 1) you can count for 10 seconds.

At the lower frequencies the speed-up capacitors (39 pF.) and recovery diodes (R.D.) should not be necessary.

The final article in this series will describe the method of timing bursts of pulses which are counted and displayed and then counted again and displayed and so on. The whole unit then being a frequency meter which measures frequencies accurately up to 1 MHz.

REFERENCES

- Black R. H., 1970. Putting the Decades to Work: A Low Cost Counter. "Amateur Radio," October 1970.
Kench, E. J., 1967 (Ed.). Electronic Counting, London, Mullard.



There is nothing unusual about the crystal oscillator in which there are two variable capacitors in series with the crystal, one of 100 pF. for coarse and one of a few pF. for fine frequency adjustment using VNG on 4.5, 7.5 or 12 MHz., or WWV as reference.

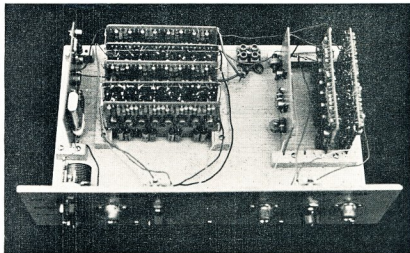
The oscillator is followed by pulse shaping and amplifying stages. The output consists of negative pulses with a p.r.f. of 100,000/sec. The crystal was obtained by airmail order from U.S. for about \$4.50 and was delivered eight days after the order was posted.

The frequency dividing unit consists of a series of six binary coded decimal frequency dividers (Kench, 1968). Outputs having intervals of 1/100, 1/10, 1 and 10 sec. are useful for frequency measurements with the counter described and these are obtained by switching to the appropriate decade. The cost of a decade is calculated as:

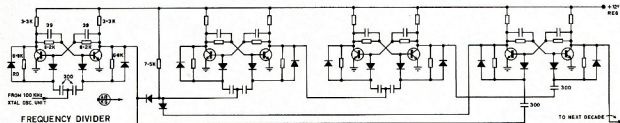
| | |
|--------------------------------|-----|
| 8 transistors at 7.5c each | 60c |
| 25 resistors at 3c each | 75c |
| 8 39 pF. capacitors at 10c ea. | 80c |

\$2.15

* 2 Yerton Avenue, Hunter's Hill, N.S.W., 2110.



The crystal oscillator and amplifier is seen on the left; five frequency dividing decades are to the right of this, and on the right hand side the amplifier and two decades for signal frequency division.



HARMONICS

LECTURE No. 10C

C. A. CULLINAN,* VK3AXU

So far we have shown how harmonic distortion will be produced, if an amplification system is not linear and whilst in the amplification or electrical transmission of speech or music we aim for the lowest amount of harmonic distortion we can achieve, there are times when harmonics can be useful, and this lecture was started because of a problem which required use of harmonics.

Reference has already been made of the use of harmonics in a radio transmitter in order to obtain a high frequency from a much more stable lower frequency. Also it sometimes happens, particularly if a self-excited oscillator is used to generate a carrier frequency in a telephony transmitter using amplitude modulation, that there may be feedback through the transmitter and some of the amplitude modulation causes frequency modulation of the oscillator if the oscillator and the modulated stage are on the same frequency. Operating the oscillator at a lower frequency and using one of its harmonics to derive the final frequency is one way of getting over this problem.

Now the plate efficiency of a class C plate modulated amplifier will be between 66.6 and about 77%. However, in recent years some transmitters have been made having plate efficiencies around 90%.

One manufacturer told the writer that at times it had been found that a transmitter in a series of similar ones was giving appreciably more output, for the same plate input, as the others. Investigation showed, however, that this transmitter was producing more odd-harmonic distortion of its r.f. output than normal.

All designs of radio transmitters, no matter the size or purpose, are faced with the problem of preventing the generation of spurious frequencies, that is, frequencies which are not harmonically related to the fundamental frequency.

A method which assists considerably to prevent spurious or parasitic oscillation is to connect a small radio frequency choke as close as possible to the plate of the valve, electrically between the plate valve and the plate tuned circuit.

The investigation into transmitters having the very high plate efficiency showed that this choke, in the output r.f. amplifier plate circuit, was resonating at one of the odd-order harmonics due to the stray capacitance to ground of the choke, the choke and stray capacitance forming a parallel resonant circuit.

Later it was found that if a parallel resonant circuit was connected in the cathode circuit of the valve and tuned to the same harmonic then with both tuned circuits in operation the plate efficiency of the stage could be as much as 90%, i.e. 90% of the d.c. power fed

● Continuing the series of lectures by C. A. Cullinan, VK3AXU, at Broadcast Station 3CS for students studying for a P.M.G. Radio Operator's Certificate.

to the plate of the valve, appeared as useful r.f. power.

Of course the output contained a considerable amount of the harmonic, but this could be reduced to negligible proportions by the use of filters.

Many broadcast transmitters, some with r.f. power outputs as great as 50 kW, are employing this method of the practical use of harmonics. (Usually either the 3rd or 5th.)

The method is not very practical with a variable frequency transmitter because of the need to re-adjust the parallel tuned circuits for each frequency, as well as the harmonic filters.

CHECKING CALIBRATION OF MOD. OSCILLATOR

(Also applies for Calibration of Frequency Meter)

Now for the tape recorder. A fault had occurred in the erase-bias oscillator and a number of new components had replaced defective ones. It was most essential to be certain that the oscillator was operating on its nominal frequency, 58 KHz.

No equipment was available to check this directly so it was decided to use harmonics of the oscillator and check these with stations in the medium frequency broadcast band.

Since June 1968, the A.B.C.B. has required all Australian m.f. broadcasting stations to hold frequency within ± 10 Hz. of the assigned frequency. Incidentally, the Standard of Reference must be the P.M.G. Standard of Frequency, and it was known that many stations do much better than the permitted tolerance.

For instance, the following are the measured deviations from the assigned frequencies of the four stations of Associated Broadcasting Services Limited, on 23/7/69:

- 3UL—Assigned freq. 530 KHz. deviation, +1.5 Hz.
- 3CS—Assigned freq. 1130 KHz. deviation, -1.2 Hz.
- 3YB—Assigned freq. 1210 KHz. deviation, +4.0 Hz.
- 3SR—Assigned freq. 1260 KHz. deviation, +1.35 Hz.

The manual which accompanied the recorder gave the nominal frequency of the oscillator as 58 KHz. and as 3WV operates on 580 KHz., it appeared to be worthwhile to try and find out if the 10th harmonic of the oscillator would zero-beat with 3WV. The 9th harmonic would fall outside the m.f. broad-

cast band whilst the 11th, 12th and 13th would not be exactly on the same frequency as any b.c. station. Fortunately in our location, 3WV could be heard sufficiently strongly to make the trial feasible.

A Palec modulated oscillator type 1, possibly of World War II vintage, was available but its accuracy was an unknown quantity so the first thing to do was to check its calibration against b.c. stations so that it could be substituted as a signal source in identifying the 11th, 12th and 13th harmonics of the recorder oscillator.

The overall accuracy of this procedure would be sufficient for our purpose.

A transistorised radio receiver with a ferrite rod aerial was obtained and tuned to 3UL, the modulated oscillator having been switched on for about two hours to warm up thoroughly, was then tuned to the same frequency, getting the best possible zero-beat with 3UL, and the dial reading noted. This was repeated with 3AR, 2CO, 3LO and 3GI.

Careful adjustments to the m.o. trimmer condenser brought the calibration right on the dot with 3GI, whilst adjustment of the iron-core slug in the m.o. coil former brought the calibration right on 3UL. Actually there was quite a bit of re-adjusting to get both calibrations correct because of some interaction between the adjustments. This modulated oscillator covers the b.c. band in two sections and we were not interested, at this stage, in frequencies outside the band 830 to 530 KHz., our main purpose being to get as many calibration points in between as accurately as possible.

With the m.o. calibrations well established, the next step was to search for harmonics of the recorder oscillator.

With the recorder in "Record" and the m.o. tuned well away from 580 KHz., the radio receiver was placed near the recorder oscillator, then carefully tuned around each side of 580 KHz. The receiver was turned around physically so that the directional effect of its ferrite rod aerial would reduce pick-up of 3WV.

● The frequencies of all the stations mentioned in this lecture were as stated at the time the lecture was written. However, with the passage of time, some station frequencies may change, therefore any Amateur wishing to calibrate equipment by using b.c. stations as frequency references should verify the frequency of each station beforehand. A list of stations may be obtained from the Australian Broadcasting Control Board, 373 Elizabeth Street, Melbourne, Vic., 300.

* 6 Adrian Street, Colac, Vic., 3250.

Slightly on the low-frequency side of 3WV could be heard a whistle or beat of about 1,000 Hz. Switching the recorder on and off "Record" caused the beat to come on or off accordingly, thus identifying an harmonic from the recorder oscillator.

The oscillator coil of this particular recorder was fitted with an adjustable iron-core and slight adjustment of this core enabled the beat to be reduced to zero-beat.

Due to the presence of programme material on 3WV, it was necessary to make final adjustments during short pauses in the programme. Because of the metal used in the construction of the building, and some direct pick-up in the receiver wiring, it was not possible to get a complete null in reception of 3WV. Also, it was not practicable to use the modulated oscillator at this stage.

When zero-beat had been accomplished at 580 KHz., we knew that one of the recorder harmonics was at 580 KHz. and although we assumed that it was the 10th harmonic of 58 KHz., there was no absolute guarantee that this was so. It could have been the 9th harmonic of about 64.4 KHz. as the recorder oscillator could have been on this frequency because of the tolerance in the inductance of the oscillator coil and its associated condensers.

The next step was to tune the receiver very carefully higher in frequency to try and find the next higher harmonic. A weak "rushing" noise was detected between 5AR and 3LO and was identified as an harmonic of the recorder oscillator. The modulated oscillator was then tuned to produce zero-beat with this "noise" and as near as could be determined from the calibration of the m.o. its frequency was almost 640 KHz., the dial indicating about 637.5 KHz. (the dial calibrations are in steps of 10 KHz. so that frequencies in between have to be estimated by eye).

If the frequency was 638 KHz., then the difference between 580 KHz. and 638 KHz. is 58 KHz., so that we would have located the 10th and 11th harmonics respectively of a fundamental frequency of 58 KHz.

But to be certain we went looking for the 12th harmonic and again we found one between 3AR and 3LO, and fairly close to 7NT (Kelso) 710 KHz., which could be received weakly.

Tuning the modulated oscillator zero-beat at this new harmonic, gave by eye estimation 695 KHz. (the 12th harmonic of 58 KHz. is 696 KHz.) and in the circumstances this was taken to be 696 KHz. in actual fact.

Out of curiosity, we located another harmonic on approx. 755 KHz. (the 13th would be on 754 KHz., but as already mentioned, the reading between successive 10 KHz. steps had to be estimated by eye so took this one to be 754 KHz.).

It will be observed that we could make use, directly, of one broadcasting station only, but could use others indirectly to check the calibration of the modulated oscillator.

The results we got were tabulated as follows:

| Tuning Sequence | Frequency | Actual Harmonic | Difference from previous Frequency |
|-----------------|-----------|-----------------|------------------------------------|
| A | 580 KHz. | 10th | — |
| B | 638 KHz. | 11th | 58 KHz. |
| C | 696 KHz. | 12th | 58 KHz. |
| D | 754 KHz. | 13th | 58 KHz. |

As the frequency between successive harmonics was 58 KHz., this meant that the fundamental frequency of the recorder oscillator was 58 KHz., which was what we set out to find.

Later the entire calibration of the modulated oscillator was checked. Its frequency ranges are:

| | |
|---|------------------|
| A | 150 - 335 KHz. |
| B | 340 - 870 KHz. |
| C | 870 - 2200 KHz. |
| D | 1.9 - 5.1 MHz. |
| E | 4.9 - 12.1 MHz. |
| F | 12.1 - 30.0 MHz. |

A receiver was not available which would cover Band A and all of Band B, but one was available which would cover from the broadcast band right through to 30 MHz., so some calculations were made to determine the feasibility of using some broadcasting stations as frequency references, then by harmonic techniques checking the calibration of the modulated oscillator.

Band A—Proposal.—Zero-beat harmonics of the m.o. against b.c. stations.

Band B—Proposal.—Zero-beat harmonics or direct against b.c. stations.

Band C—Proposal.—Zero-beat direct at low frequency and against b.c. stations.

However, there are no Australian broadcasting stations operating on 2.2 MHz. and as mentioned it would not be feasible to try and rely on harmonics of b.c. stations, particularly at a distance.

For instance, in August 1969, field strength measurements were made of the harmonic radiation of station 3CS, at 0.9 mile from the centre of the aerial array and in the major lobe (3CS uses a directional aerial). The values were:

| |
|-----------------------------|
| 2nd harmonic: |
| 2260 KHz., 187 micro-volts. |
| 3rd harmonic: |
| 3390 KHz., 20 micro-volts |

The calculated values for one mile becomes 168.3 and 18 micro-volts respectively and as a result of these low values of field strength it is well-nigh impossible to use the harmonics of 3CS, in the city of Colac, as they are well down in the general noise level.

However, there was a way out of this difficulty by obtaining a second modulated oscillator or signal generator and using its harmonics after checking its calibration in the m.f. b.c. band.

The method used was to tune a well warmed-up second m.o. to zero-beat with a selected b.c. station, then the multi-band receiver was used to find one of the harmonics in approximately the correct position on the receiver dial. Next the Palec m.o. was tuned and adjusted to give zero-beat with this

harmonic, care being taken to determine that the Palec m.o. was switched to the correct band and that it was beating directly and not via one of its harmonics.

In all cases the multi-band receiver was used to locate the next harmonic, either above or below the desired one to determine that it was the correct numerical one (as outlined earlier when discussing the tape recorder).

Fortunately sufficient harmonic output from the second m.o. was available to identify 30 MHz.

It must be appreciated that all zero-beating was done by ear as it was felt that this was sufficiently accurate and, in any case, equipment to detect the exact zero-beat was not available, also it must be realised that any error in the fundamental is multiplied by the numerical frequency of the harmonic.

However in all cases given, the worst error would not exceed 200 Hz. at 30 MHz. and would more likely be not more than about 40 Hz. at this frequency.

Most of the work was done at night because some of the stations were interstate.

This method may be used for frequency calibration of equipment using other selected broadcast stations, also under some circumstances VNG can be used.

If precision measuring equipment is available VNG will probably be more accurate than either WWV or WWVH since signals from both of these stations are subject to distance (via ionosphere hops as well as Doppler effect caused by rotation of the earth).

Here is a tabulation of the frequencies and b.c. stations used in the above project:

| |
|---------------------------------------|
| Band A: 150 KHz. - 335 KHz.— |
| Then $150 \times 4 = 600$ KHz. = 7ZL. |
| Then $335 \times 2 = 670$ KHz. = 2CO. |
| Band B: 340 KHz. - 870 KHz.— |
| Then $340 \times 2 = 680$ KHz. = 2KP. |
| Then $870 \times 1 = 870$ KHz. = 2CB. |
| Band C: 870 KHz. - 2200 KHz.— |
| Then $870 \times 1 = 870$ KHz. = 2GB. |
| Then $2200 \div 2 = 1100$ KHz. = 4LG. |
| Band D: 2200 KHz. - 5 MHz.— |
| Then $2200 \div 2 = 1.1$ MHz. = 4LG. |
| Then $5.0 \div 5 = 1.0$ MHz. = 3HA. |
| Band E: 5.0 MHz. - 12 MHz.— |
| Then $5 \div 5 = 1.0$ MHz. = 3HA. |
| Then $12 \div 8 = 1.5$ MHz. = 3AK. |
| Band F: 12 MHz. - 30 MHz.— |
| Then $12 \div 8 = 1.5$ MHz. = 3AK. |
| Then $30 \div 20 = 1.5$ MHz. = 3AK. |

Further checks of the Palec m.o. calibrations were made in m.f. broadcast and higher bands by using the signals of 3UL, 3CS, 3YB and 3SR as their accuracy was known.

This lecture has shown how harmonics are generated when an electrical wave is passed through a non-linear device. Also, it has shown that generally harmonics are undesirable, but occasionally use can be made of them.

AMATEUR FREQUENCIES:
ONLY THE STRONG GO ON—SO
SHOULD A LOT MORE AMATEURS!

Federal Repeater Secretariat Report

1970 has come to an end with several repeaters now on the air. The Secretariat will have a report available early in the new year. This will be sent to known active groups. Anybody else who would like a copy should send a large stamped, self-addressed envelope to the Federal Repeater Secretariat, P.O. Box 342, Crows Nest, N.S.W., 2065. We would also like to receive information from any group as to progress in your area.

ACTIVITIES

Here, briefly, is the activity as we know it:

VK4: Last reports indicated that systems were being tried for both Brisbane and the Gold Coast.

VK2: A channel 4 system is operating in Sydney with good coverage. A channel 4 application is pending for Newcastle. Interest is being shown in a channel 1 system for Gosford. Orange in the Central West is still running their network on 146.1 in and 145.854 out. It is expected that the output will be changed to 145.6 at some future time.

VK3: We understand that there is an operational channel 4 system at both Gippsland and Geelong, and a proposed system for Mildura. There appears to be no Melbourne activity and the original Z1 system is off the air.

VK7: No up-to-date report, but there may be some activity in the north of the island.

VK5: We understand that the channel 4 system destined for the slopes of Mt. Lofty is currently being checked out at an Amateur QTH.

VK6: Work is under way for a channel 4 system in Perth which will be installed, after tests, on high ground near the t.v. sites. Albany in the south is showing interest in a repeater. It

is likely that VK6 will develop a channel 4 network to serve the needs of the State.

The American scene has also been interesting during the past year with the F.C.C. directing a new policy for their repeater operation. Those who have read the American Amateur Radio publications will have seen what has happened. It is to be hoped that it does not occur in this country and we urge all users and developers of repeaters to co-operate with your local repeater co-ordinator and in turn with the Federal body.

If anybody can add to the above report would you please advise the F.R.S. care of the above address.

VK2 have been checking with the F.R.S. on 6 metre f.m. frequencies and have announced that they intend to introduce a local f.m. channel in addition to the national channels of 52.525 MHz. (prime) and 52.656 MHz. (secondary) already in use in that State. The reason is to have available a channel which will be reasonably free from Interstate traffic for emergency/broadcast use at times when either of the national channels are open Interstate. This frequency is 52.7 MHz.

With this allocation in mind, the F.R.S. suggests that similar State channels be introduced to all States. These channels are at 50 KHz. spacing:

VK5 52.6 MHz.
VK6 52.656 MHz. (existing)
VK2 52.7 MHz.
VK7 52.750 MHz.
VK3 52.8 MHz.
VK4 52.850 MHz.

As these are at this stage only suggestions, the F.R.S. would like to hear from users in all areas with their thoughts.

The F.R.S. is also seeking information on the use of 6 metre a.m. nets. To

date we have the following information, which we wish to confirm and add to, so that the records may be up dated.

VK6 52.586 MHz.
VK5 53.100 MHz.
VK7 53.035 MHz.
VK3 53.032 MHz.
VK4 53.032 MHz.
VK2 53.866 MHz. (Sydney)
VK2 53.982 MHz. (Wollongong)

We would like to know what areas these frequencies are being used and if there are any additional ones.

It is pleasing to note the list of beacons being maintained by Eric VK5LP in his "A.R." column. The Sydney repeater is usually automatically keyed every five minutes with its call sign—VK2BWI—in m.c.w. (145.9 MHz.). The choice of 146 MHz. by VK9XI on Christmas Island is interesting, we would like to hear if it is copied anywhere as the majority of stations on this frequency would be using f.m. receivers.

We would like to wish all Amateurs all the best for the New Year and a reminder that if you have any question or problem with the national side of v.h.f. repeater, beacon or net operation, then please send your inquiry either direct or through your State's Federal Councillor to the Federal Repeater Secretariat, who are a sub-committee of Federal Executive. The address of the F.R.S. is P.O. Box 342, Crows Nest, N.S.W., 2065.

☆

N.Z.A.R.T. SUBSCRIPTION

Please state note that as from this notice the subscription to N.Z.A.R.T. for "Break-In" is increased to \$3.00 per annum. It is regretted that prior notice could not be given and any renewals or new subscriptions will be accepted only at this increased rate.

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ERRATA

The author of the Lecture Series advises of the following errors:—

No. 5, July 1970, p. 15, col. 3, para. 2 and 4: Change word "average" to "effective" (lines 7 and 14).

No. 6, August 1970, p. 22, col. 1: Theorem of Pythagoras should be Hypotenuse² = side a² + side b². Also on page 23, last col.: Change 194.2 watts to 1194.2 watts.

No. 10A, Dec. 1970, p. 13: Postcode for A.B.C.B. is 3000. Col. 3, para 7: "as can a valve rectifier which is wrongly biased . . ." should read "as can a valve amplifier which is wrongly biased . . ."

— . . . —

WINNING DIVISIONS OF R.D. TROPHY—1948 TO 1970

| | | | |
|------|-----|------|-----|
| 1948 | VK2 | 1960 | VK7 |
| 1949 | VK7 | 1961 | VK6 |
| 1950 | VK7 | 1962 | VK6 |
| 1951 | VK7 | 1963 | VK4 |
| 1952 | VK6 | 1964 | VK5 |
| 1953 | VK5 | 1965 | VK5 |
| 1954 | VK5 | 1966 | VK6 |
| 1955 | VK5 | 1967 | VK3 |
| 1956 | VK6 | 1968 | VK7 |
| 1957 | VK6 | 1969 | VK7 |
| 1958 | VK5 | 1970 | VK4 |
| 1959 | VK7 | | |



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W.I.A. WORKED ALL STATES (AUST.) AWARD

OBJECTS

1. This Award has been created in order to stimulate interest in the v.h.f./u.h.f. bands and is of a high standard to fully acclaim the proficiency of the recipients on their achievements.
2. This Award, to be known as the "Worked All States (Aust.) Award", will be issued to an Amateur in Australia or overseas who satisfies the conditions following.
3. A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz. New Zealand or Papua Territory. Countries, for the purposes of this Award, are set out in the Australian D.X.C.C. Countries List.

REQUIREMENTS

- 2.1 Contacts must be made on the v.h.f./u.h.f. bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz, prior to 1/4/44 will count towards the 52 MHz Certificate.
- 2.2 One verification from each of the following areas of the Commonwealth of Australia is required:
 - (a) Australian Capital Territory.
 - (b) New South Wales.
 - (c) Victoria.
 - (d) Queensland.
 - (e) South Australia.
 - (f) Western Australia.
 - (g) Tasmania.
 - (h) Northern Territory.
 In all, eight (8) verifications are required.

- 2.3 It is possible under these rules for one applicant to receive one Award for each of the Authorized Bands between 30 and 3,009 MHz.

OPERATION

- 3.1 All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.
- 3.2 Contacts may be made using any authorised type of emission for the band concerned.
- 3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.
- 3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATION

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- 4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disqualification of the applicant.
- 4.3 Each verification submitted must show the date and time of contact, type of emission

and frequency band used, the report and the location or address of the station at the time of contact.

- 4.4 A check list must accompany every application setting out the details for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether they are members of the W.I.A. or not.

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the Federal Awards Manager, W.I.A., P.O. Box 67, East Melbourne, Vic. 3002, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- 5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members.
- 5.3 Successful applicants will be listed periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those submitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive, W.I.A., in the interpretation and application of these Rules shall be final and binding.
- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

HEARD ALL VK CALL AREAS (H.A.-VK-C.A.) AWARD

At the last Federal Convention held in Adelaide at Easter it was agreed that the scope of the S.w.I. H.A.-VK-C.A. Award be enlarged to allow Australian S.w.I.s to become eligible applicants. The amended rules are given below and the S.w.I. Awards Manager will consider Australian applicants for the award as from the date of publication of these new rules in "Amateur Radio".

In particular, the requirements of Rule 1.2 should be noted. This requires that the applicant S.w.I. must be a member of an affiliated I.A.R.U. (International Amateur Radio Union) Society. For Australian applicants this means they must normally be members of the W.I.A.; for applicants in the U.K., to be members of the R.S.G.B.; for Japanese S.w.I., to be members of J.A.R.L. and so on. This rule will be strictly enforced and Rule 4.4 requires the applicant to state the name of the society of which he is a member.

OBJECTS

1. This award was created in order to stimulate interest in the logging, by both Australian and overseas Shortwave Listeners, of the various call areas of the Commonwealth of Australia and its Territories and to give successful applicants some tangible recognition of their achievements.
2. This award, to be known as the H.A.-VK-C.A. Award, will be issued by the Wireless Institute of Australia to any Shortwave Listener in the world who is a member of an affiliated society of the I.A.R.U. who satisfies the following conditions: A S.w.I. resident in Australia or its territories may be eligible for the award.
3. A certificate of the award will be issued to the applicants who show proof of having logged stations in all of the Australian call areas as listed in the Appendix. No endorsements are available.

REQUIREMENTS

- 2.1 Verifications are required from all the call areas of Australia and its Territories as shown in the Appendix. In all, 22 verifications are necessary.
- 2.2 The commencing date of the award is 1st January, 1946. All loggings made on or after this date may be included.

OPERATION

- 3.1 Loggings may be made of Australian stations using any authorised frequency band or type of emission permitted to Australian Amateurs.

- 3.2 Credit may only be claimed for logging stations using regularly-assigned government call signs.
- 3.3 Loggings of ship or aircraft stations in Australia or Australian Territories will not be eligible, but land-mobile or portable stations may be claimed, provided their specific location at the time of logging is clearly shown on the verification.

VERIFICATIONS

- 4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that specific loggings have been made.
- 4.2 Each verification submitted must be exactly as received from the station logged, and altered or forged verifications will lead to the disqualification of those items and may lead to the disqualification of the applicant.
- 4.3 Each verification submitted must show the date and time of transmission, type of emission, frequency band used, and the location or address of the station at the time of logging.
- 4.4 A check list must accompany every application setting out the following details.
 - 4.4.1 Applicant's name, S.w.I. number, if any, and address;
 - 4.4.2 Name of affiliated Society (see Rule 1.2);
 - 4.4.3 Details of each logging as required by Rule 4.3.

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the "S.w.I. Awards Manager, P.O. Box 67, East Melbourne, Victoria, Australia, 3002," accompanied by the verification cards and the check list (Rule 4.4). Sufficient postage (International Reply Coupons are required from overseas applicants) must be enclosed to cover return postage of the cards to the applicant.
- 5.2 Where a reciprocal agreement exists between the W.I.A. and the applicant's Society, the appointed officer of that Society may carry out the check, and if correct, may forward a written application for award on behalf of the applicant. The list (Rule 4.4) must also be forwarded.

- 5.3 Applications will be examined by the S.w.I. Awards Manager, who will arrange for the award to be forwarded either direct, or through the applicant's Society as required.

In all cases of dispute, the decision of the S.w.I. Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these rules shall be final and binding.

- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them as necessary.

APPENDIX

| Territory | Call Area | QSLs Required |
|------------------------------|-----------|---------------|
| Australian Antarctica | ... | VK0 1 |
| Heard Island | ... | |
| Macquarie Island | ... | |
| Australian Capital Territory | ... | VK1 1 |
| Lord Howe Island | ... | VK2 3 |
| State of New South Wales | ... | |
| State of Victoria | ... | VK3 3 |
| State of Queensland | ... | VK4 3 |
| Thursday Island | ... | |
| Willis Island | ... | |
| State of South Australia | ... | VK5 3 |
| State of Western Australia | ... | VK6 3 |
| Flinders Island | ... | VK7 3 |
| King Island | ... | |
| State of Tasmania | ... | |
| Northern Territory | ... | VK8 1 |
| Admiralty Islands | ... | VK9 1 |
| Bougainville Island | ... | |
| Christmas Island | ... | |
| Cocos Island | ... | |
| New Britain | ... | |
| New Guinea | ... | |
| New Ireland | ... | |
| Norfolk Island | ... | |
| Papua Territory | ... | |

Note.—In areas above, where more than one confirmation is required, loggings may be made by any or all of the Territories listed in brackets.

AMATEUR EQUIPMENT AND CUSTOMS DEPT.

We were recently asked to investigate a complaint that the Customs Department had confiscated some Amateur equipment from a migrant to this country. The complaint was made to us by the holder of an Australian licence. Either he was not given the full story or failed to pass it on.

Investigation showed that the migrant did not have a current licence from the country from which he migrated, nor did he have the qualifications to obtain a licence either there or in Australia. There is much more to the story, but we have no desire to embarrass anybody involved, sufficient to say the equipment will not be returned.

Should any of your overseas Amateur friends have thoughts of migrating you can assure them that provided they play by the rules, they will have no trouble.

Briefly, licensed Amateurs may bring commercial gear with them for their own use (and not for sale for a period of 12 months from arrival in Australia) provided the equipment was purchased

at least 12 months prior to their departure for Australia; no duty is payable. A receipt must be produced to the Customs Department, showing clearly the date of purchase.

The same provisions apply to ancillary equipment. Home-built equipment is not subject to restrictions.

It must be remembered that an Australian licence must be obtained before the equipment can be used.



F.M. BROADCASTING

The inquiry by the Australian Broadcasting Control Board into the desirability or otherwise of introducing frequency modulation broadcasting into the Commonwealth will be held in Sydney, Melbourne and Adelaide as follows:

Sydney: From 1st March, 1971, to 5th March, 1971, in the Theatre, Commonwealth Centre, Chifley Square, Sydney, commencing at 10 a.m. on Monday, 1st March, 1971.

Melbourne: From 15th March, 1971, to 19th March, 1971, at Ian Clunies

Ross House, 191 Royal Parade, Parkville, commencing at 10 a.m. on Monday, 15th March, 1971.

Adelaide: On 24th March, 1971, in the Board Room, Australian Broadcasting Control Board, 32 South Terrace, Adelaide, commencing at 10 a.m.

Announcing this, the chairman of the Board, Mr. Myles F. E. Wright, said that all persons who had submitted written statements to the Board in response to the Board's Notification dated 10th June, 1970, would be advised in writing of the time and place at which they would be required to attend the Board's inquiries for the purpose of giving evidence in relation to their written statements.

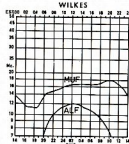
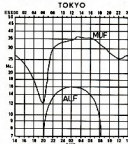
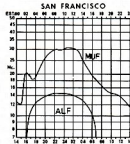
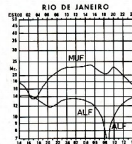
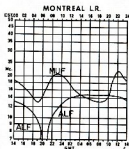
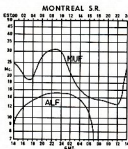
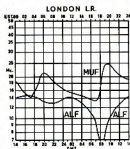
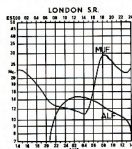
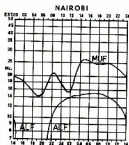
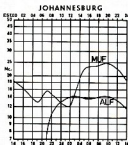
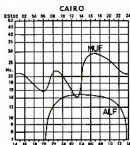
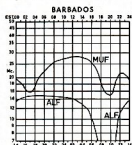
Mr. Wright added that in response to the Board's invitation for interested persons to give evidence at its inquiry, a total of 39 submissions had been received involving 56 witnesses.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—SO
SHOULD A LOT MORE AMATEURS!

PREDICTION CHARTS FOR FEBRUARY 1971

(Prediction Charts by courtesy of Ionospheric Prediction Service)



COOK AWARD

R.S.G.B. CERTIFICATES AND AWARDS

As a result of discussion between the British Amateur Radio Teleprinter Group and the Radio Society of Great Britain, the R.S.G.B. have agreed that any of the Certificates and Awards for which they are responsible can be endorsed for r.t.y. operation subject to the normal submission of evidence such as QSL cards. A list of Awards follows.

RULES

The following general rules and conditions apply to all Certificates and Awards issued by the Radio Society of Great Britain and should be read in conjunction with the conditions which govern the award of the individual Certificates:

1. R.S.G.B. Certificates and Awards will be issued free of charge. Members of the R.S.G.B. R.S.G.B. Certificates will also be issued on payment of a fee of 7/- (35p), or the equivalent in other currency, per Certificate, to non-members of the R.S.G.B. (7/- equals 10 international reply coupons).

2. In the case of transmitting Certificates and Awards, claimants must certify in writing that their licensed power was not exceeded in effecting the contacts upon which their claim is based.

3. All claims must be sent to R.S.G.B. headquarters. Cards will only be returned by registered or recorded delivery mail if sufficient extra money is sent with the claim.

4. In the case of transmitting Awards each claim from within the U.K. must be accompanied by documentary proof in the form of letters or cards showing that two-way communication has taken place. In the case of claims from outside the U.K., a statement from the applicant's national society that the necessary cards have been checked will be accepted.

5. Contacts with mobile stations (other than ships) located in the British Commonwealth will be accepted, provided the exact location of each station at the time of contact is clearly stated on the evidence submitted.

6. Holders of an R.S.G.B. Certificate or Award are authorised to use the initials letter of the Certificate or Award.

7. Post-war cards only may be submitted as proof of contact.

8. In the case of transmitting Awards, endorsements for 100 per cent. telephony, 100 per cent. telephony and 100 per cent. single sideband contacts and/or single band, may be made on the submission of cards clearly confirming the mode or frequency of transmission.

9. Contacts may be made from any location in the same call area, or if no call area exists then from the same country, except that no claimant may submit cards confirming contacts with his station call when used for the purpose of an R.S.G.B. National Field Day event.

10. Claims submitted by radio societies must be signed by the licensee holder and the honorary secretary. If they are the same person then by the licensee holder and the chairman.

11. In the case of any dispute concerning a claim the decision of the Council of the R.S.G.B. shall be final.

COMMONWEALTH DX CERTIFICATE (CDXC)

This Certificate may be claimed by any licensed Radio Amateur who can produce evidence of having made two-way communication with Amateur Radio stations located in at least 50 of the call areas of the British Commonwealth of Nations on the 14 MHz. band, and in addition with at least 50 of the same call areas on other Amateur frequency bands. In the case of the "other" Amateur frequency bands a particular call area may be claimed only once, irrespective of the band on which the call area was worked. "Other" call areas do not have to be the same as those contacted on 14 MHz.

Members of the R.S.G.B. only may claim the CDXC lapel badge at an additional cost of 7/-, 35p or 10 International reply coupons.

BRITISH COMMONWEALTH RADIO

TRANSMISSION AWARD (BCRTA)

This Award may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with Amateur Radio stations located in at least 50 call areas of the British Commonwealth of Nations.

WORKED BRITISH COMMONWEALTH

CERTIFICATE (WBC)

This Certificate may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with at least one British Commonwealth Amateur radio station located in each of the five recognised continental areas as defined by the International Amateur Radio Union. (North and South America count as one continental area.)

BRITISH COMMONWEALTH RADIO

RECEPTION AWARD (BCRRA)

This Certificate may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 50 of the call areas of the British Commonwealth of Nations.

I.A.R.U. REGION 1 AWARD

This award may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with stations located in countries whose national societies are members of the Region 1 Division of the International Amateur Radio Union. This Award shall be issued in two classes: Class 1, for contacting all member countries, and Class 2 for contacting 25 member countries.

DX LISTENERS' CENTURY AWARD (DXLCA)

This Award may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 100 of the countries listed in the R.S.G.B. Countries List. Stations will be available for every 25 additional countries confirmed.

FOUR METRES AND DOWN CERTIFICATES

These Certificates are available to both licensed Amateurs and Listeners and cover operating achievements in the 70, 144 and 432 MHz. bands. A complete set of rules and further information are obtainable from the Society headquarters. The rules listed here-to do not apply to these Awards.

Address all correspondence to R.S.G.B. Honorary Certificates Manager, Radio Society of Great Britain, 35 Doughty St, London, WC1N, 3AE.



385 Whipperwill Lane,
Stratford
Connecticut, 06497, U.S.A.

Dear Sir,

This award has a special meaning for our family. My wife is a direct descendant of Captain Cook, and our one-year-old son, James Cook Monde, is named for his great-great-etc. grandfather who is honoured by your award. So you can be sure that, should our logs qualify us for the certificate, it will assume a place of honour in our home. I have taken the liberty of enclosing a photograph of myself and "Jamie".

Thank you very much, and 73.

(Signed) James W. M. Monde, W10KG.



"CQ" W.W. DX CONTEST AUST. RESULTS

ALL-TIME RECORDS INVOLVING VK CONTACTS

| Phone—Single Operator, All Band | | | | |
|---------------------------------|-----------|-------|------|------|
| | Points | QSOs | Zon. | Cts. |
| VK2ADY/9 (1967) | 5,045,115 | 3,310 | 153 | 334 |
| (This is a world record) | | | | |

| C.W.—Single Operator, Single Band | | | | |
|-----------------------------------|---------|-------|------|------|
| MHz. | Points | QSOs | Zon. | Cts. |
| 1.8 VK5KO (1964) | 6 | 1 | 1 | 1 |
| 3.5 VK3APX (1969) | 8,964 | 130 | 11 | 17 |
| 7.0 VK3NO (1969) | 87,542 | 411 | 25 | 48 |
| 14 VK3APJ (1967) | 422,240 | 1,130 | 35 | 93 |
| 28 VK3UG (1967) | 329,608 | 1,948 | 32 | 72 |

| Multi-Operator, Single Transmitter | | | | |
|------------------------------------|---------|-------|------|------|
| | Points | QSOs | Zon. | Cts. |
| VK3NO (1963) | 945,248 | 1,199 | 86 | 185 |

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Many Maps have been sold and we would like to thank all those people who have made donations over and above the price of the Map.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.", and back copies may not be available upon request. To preserve continuity of your files of "A.R.", please pay your annual subscription now.

NEW CALL SIGNS

SEPTEMBER 1970

VK1ZAD—S. J. Bland, 15 Abbeckt St., Watson, 2602.
VK1ZQR—R. C. Quick, 123 Theodore St., Cur-
rang, 2605.
VK1ZWP—W. B. Pywell, 2 Birbal Place, Wara-
manga.
VK2BZ—E. J. Mulholland, Kapooka Military
Camp, Kapooka, 2661.
VK2AMG—K. R. F. Trevenar, 11 Grey St.,
Glenbrook, 2773.
VK2ASY—D. K. W. Bradbury, "Karana," Der-
wong, 2745.
VK2BAT—J. T. McMillan, 28 Glossop St., St.
Mary's North, 2789.
VK2HBT—N. W. Deague, 1/55A Darling Point
Rd., Darling Point, 2798.
VK2BCH—K. Y. H. Young, 138 Woll St.,
Kingsgrove, 2306.
VK2HVP—R. H. Little, 4 Fisher St., Parkes,
2670.
VK2ZDL—R. G. Lukin, 6/2 Grosvenor St.,
Kensington, 2033.
VK2ZKE—K. J. Alcock, 1 Martin St., Ryde,
2112.
VK2ZKJ—G. H. Barnes, 30 Tweed St., Bruns-
wick Heads, 2483.
VK2ZLF—M. A. Menchin, 21 Maxwell Ave.,
Glenelg Heights, Cragge, 2800.
VK3FF—P. J. Fitzherbert, 45 Mount Pleasant
Rd., Belmont, 3216.
VK3AEU—R. J. Flanagan, 51 Valetta St., Car-
rum, 3187.
VK3AIN—E. R. Dolman, Station: 55 Como Pde.,
Mentone, 3194; Postal: 15 Bowes Ave.,
Westbrook, Margate, Kent, England.
VK3AJY—R. Dorin, 12 Cleander St., Glen
Waverley, 3150.
VK3AJY—J. Spark, 87 Lloyd St., Moe, 3823.
VK3AKR—S. King, 1 Kalmia Ave., Mount
Waverley, 3149.
VK3ANM—J. C. Finlay, 48 Carpenter St.,
Brighton, 3188.
VK3AQO—P. J. Solly, Station: Rainbow, 3424;
Postal: P.O. Box 102, Rainbow, 3424.

VK3ARY—W. R. Badrock, 2 Kalmia Ave., Mt.
Waverley, 3140.
VK3ASG—L. W. Brown, 19 Emerald St., Preston,
3024.
VK3AVV—D. W. Brumley, 32 Faversham Rd.,
Canterbury, 3128.
VK3BDR—R. E. Clarke, 5 Homebush Cres.,
Hawthorn, 3123.
VK3BDZ—V. W. Harrison, Rowville Ave.,
Sorrento, 3943.
VK3BEA—R. H. Fallick, 4 Millio Cres., Swan
Hill, 3535.
VK3BEB—E. McCa, 27 Kenney Rd., Shep-
arton, 3533.
VK3BED—P. L. E. Bennett, 22 Charles St.,
Traralgon, 3644.
VK3BEM—G. N. Marks, 67 Stewart St., Rupan-
yup, 3558.
VK3BEW—N. D. White, 59 Charles St., Ascot
Vale, 3032.
VK3YEC—D. J. McDonald, 24 Higgins Ave.,
Sunbury, 3429.
VK3YED—S. A. Cleaveland, Jersey Rd., Bays-
water, 3153.
VK3YEL—J. E. Rising, 189 Centenary Rd.,
Melton, 3537.
VK3YEM—J. E. McKenna, 14 Marshall Ave.,
Moe, 3825.
VK4MX/T—J. R. Martin, Station: 22 Thistle
St., Blackall, 4723; Postal: P.O. Box
180, Blackall, 4723.
VK4ZH—C. R. Saunders, Advanx St., Kenmore,
4069.
VK5KS—R. A. Sedunary, Lot 134, Compass Rd.,
Seaford, 5165.
VK5QO—M. L. Severson, 5 Charlbury Rd.,
Medindie Gardens, 5061.
VK5TT—A. G. Bolton, Mountford Ave., Aid-
gate, 5154.
VK5XD—R. G. Ellis, 5 May St., Henley Beach,
5022.
VK5ZIH—I. A. Rourke, 24 Edmund St., Nor-
wood, 5067.
VK5ZJF—J. J. Moody, 30 Aquamarine Dr.,
Sulbury East, 5129.
VK5ZJ—C. J. W. Cook, 28 North Pde., Kings-
wood, 5062.
VK6AN—A. J. Ball, 55/50 Cambridge St., West
Leederville, 6007.

VK6BY—G. S. Byass, 79 Parramatta Rd.,
Doublevue, 6018.
VK6NH—N. H. Hyde, Flat 4, Tijuanca Court,
59 Blackwood St., Hamilton Hill, 6163.
VK6SG—R. J. Caldwell, House No. 651, Tom
Price, 6751.
VK6SW—J. J. Harrison, 7 Frimley Way,
Morley, 6082.
VK6ZGG—G. R. Gaiger, 453A Sevenoak St.,
Sackham, 6107.
VK6ZG—K. M. Anderson, 1 Walney Ave.,
Danella, 6082.
VK8AJ—A. C. Johnson, Anna-Roula Carapark,
Gr. McMillan Rd. and Sturt Hwy.,
Berrimah, 5788.
VK8KG—K. F. Gosling, Station: Nhulunbul,
Gove; Postal: C/o Nabalo Pty. Ltd.,
Nhulunbul, Gove, 1197.
VK8ZHT—H. G. Tremethick, 1905 Bald Circuit,
Alawa, 5782.
VK9ET—D. T. Trickett, C/o Bechtel Wke Mine
Site Quarters, Panguna, Bougainville.
VK9FH—G. F. Hargrethelmer, C/o Airmen's
Memorial School, Ewassa, P.
VK9GH—G. R. Hughes, Lot 3, Section 146,
Tokarra, Port Moresby, P.
VK9LM—L. G. Meek, C/o A.W.A. Ltd., P.O.
VK9LV—R. L. Varney, Lot 17, Section 81,
Boroko, P.
VK9XK—K. J. Hiam, Christmas Island, Indian
Ocean.
VK9XX—A. P. Kershaw, Christmas Island,
Indian Ocean.
VK9CC—C. R. Christiansen, Mawson.
VK9IN—K. D. Hanson, Mawson.
VK9PE—P. J. Fitzherbert, Casey Base.

CANCELLATIONS

VK1EM—E. J. Mulholland, Now VK2BZ.
VK1WZ—R. P. Whalley, Deceased.
VK3AFA—R. J. Caldwell, Now VK6SG.
VK3AYE—L. A. Ball, Now VK6AN.
VK3YDE—S. King, Now VK1AKR.
VK3ZG—W. R. Badrock, Now VK3ARY.
VK3ZHI—J. G. Finlay, Now VK3ANM.
VK3ZRD—R. Dorin, Now VK3AJY.
VK3ZTP—P. J. Fitzherbert, Now VK3FF.
VK3ZTN—P. J. Solly, Now VK3AQO.
VK3ZUV—D. W. Brumley, Now VK3AVV.
VK3ZVW—N. D. White, Now VK3BEW.
VK4OQ—P. J. Murdoch, Not renewed.
VK4PT/T—C. R. J. Patton, Deceased.
VK4QL—M. S. Feder, Not renewed.
VK4ZT—H. B. Sandford, Transferred to A.C.T.
VK5ZB—C. J. McCarthy, Not renewed.
VK5LV—Christian Brothers College, Not re-
newed.
VK5SY—J. C. Watson, Not renewed.
VK5ZB—G. S. Byass, Now VK6BY.



VK2 AREA 5 MEETING

All Amateurs, W.I.A. members and Associates and S.W.I.'s in the South-West, Area 5, of VK2 are invited to special meeting on Sunday, 28th February, 1971, at 3 p.m. in the R.S.I. Room at the Memorial Hall, Lockhart, next to the Post Office.

Agenda: Formation of Area Committee; future conventions and field days; repeaters; awards; any other business you have.

Area 5 is about 230 miles by 200 miles in extent and has about 20 cities, towns and villages with active Amateurs. The Area 5 book-up is held every Monday night at 2300 hours E.A.S.T. on about 3567 KHz. and has been going now for over seven years.—Harry VK-2ADC (Area Officer).

OBITUARY

ROY D. NICHOLLS, VK2RN

We regret to report the sudden passing of Roy D. Nicholls, VK2RN, in early November at Burnside.

Roy commenced his career as an apprentice to an electrical contractor, subsequently serving four years in Army Signals. After the war, he spent a short time with the P.M.G. before going to the A.P.P.M. paper mills at Burnside where he was engaged in electronics for 17 years.

For the past few years Roy conducted his own business in t.v. and electrical servicing and a.p. service.

Roy was an active member of the local zone of the W.I.A. for many years, and to his widow and family we extend our sincere sympathy.

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Name.....

Address.....

Sub-Editor: ERIC JAMIESON, VKSLP
 Forrester, South Australia, 5233.
 Closing date for copy 30th of month.
 All Times in E.S.T.

AMATEUR BAND BEACONS

VK3 144.700 VK3VE Killybeg, 20m. E. of Melb.
 VK4 144.390 VK4VW 167m. W. of Brisbane.
 VK5 52.000 VK5VF Mt. Lofty.
 144.800 VK5VF Mt. Lofty.
 VK6 52.006 VK6VF Tarnarvon.
 52.900 VK6TS Carnarvon.
 144.500 VK6VE Mt. Barker.
 145.000 VK6VF Tuart Hill.
 435.000 VK6VF (en. by arrangement).
 VK7 144.400 VK7VF Devonport.
 VK9 144.600 VK9XI Christmas Island.
 ZL3 145.000 ZL3VHF Christchurch.
 JA 51.985 JA8JG Japan.
 W 50.691 WB8KAP U.S.A.
 HL 50.100 HL8WI South Korea.

Another beacon has been added to the growing list this month with the great news that the VK3 beacon, long proposed, is now operating on 2 metres on a frequency of 144.706, running 10 watts c.w. to a cloverleaf antenna. By the time this is in print, it should be located at its permanent site at Killybeg, about 10 miles east of Melbourne on the Colonial Gap building, and 550 feet above sea level. I am indebted to Bob VK3AOT for this great piece of news, it is a long awaited vacant spot in southern Australia. My happiness will be complete when I receive the same news from VK2.

While on the subject of beacons, news comes from the pen of Amateur Radio Club from the person of Tony VK3XX, Secretary, that their beacon using the call sign VK3XXI operates on a frequency of 144.680 MHz, not 146.600 MHz as published. The beacon beams towards Carnarvon on the west coast of Western Australia. It sends the call sign and the signal is received in c.w. followed by a long dash. Tony says he feels the beacon should be heard from time to time in W.A., as during a gap in the opening early in November 1970 hours, the beacon at Christmas Island made contact with the harbour-master at Port Hedland using the commercial v.h.f. channel 16 on 156.8 MHz., a calculated distance of 900 miles. The beacon uses a converted commercial radio telephone unit and the 6 element beams are on top of a 200 ft. commercial radio station tower.

Tony goes on to say, "I have just erected an antenna system which includes a 3 element h.f. beam plus a 6 element 2 metre beam and a 3 element 6 metre beam, coupled to a Yaesu antenna with 6 and 2 metre converters. At present I cannot transmit on v.h.f., but any quiet willing to listen and if necessary work cross-band with an antenna interested. I have already contacted Darwin on h.f. and trust we may stir up some activity from there. Anybody interested can write to the Amateur Radio Club, Christchurch, Indiana Ocean, and we will see what can be done." Thanks indeed for your interesting information Tony, and please keep me informed of your activities over there.

Everyone seems to have had their fair share of 6 metre DX so far this season. Many of the openings have been quite good, and stations are making very good use of the time. New Zealand stations have been worked in VK5 this year after an absence last year, VK5QK and ZL3RZ plus a ZL2 seems to have been the last. The last time I have been noted strongly for hours on end but with no other activity.

Charlie C21AA in Nauru right up near the equator, has been causing quite a stir in the eastern South Pacific. VK2RZ has indicated he too worked C21AA, on 20th Dec. Bob further indicates on this day the band was open all the way from Nauru, and possibly further. The VK3 VK4 and VK5 stations are at a recent card from JAX3PO now only leaves a QSL to come from JA8 to give Bob all JA areas.

Probably the best day in VK5 was 26th Dec, this is often the best day of the season and one I look forward to anyway. So many signals around you had plenty to choose from. Pleased to see Bob, at the public station, clarity, and the absence this year of stations calling CQ DX a.m. stations only. Personally, I got quite a kick out of listening to Colin VK5KQZ on Mt. Gambier on back scatter. The band was wide open to VK4. Despite several calls to Colin, I could not latch on to him, however his signals had a characteristic flutter and were not there when the beam was pointed at him.

With quite a lot of good 6 metre DX around for the last couple of weeks of 1970, many of you could have been getting a lot of getting together 100 or more AX call signs for the Cook Award, v.h.f. section. As there are a number of us who are still trying to lobby to get this section added, it is hoped as many as possible will now follow up by submitting a log and claiming the award. Although you have until the end of 1971 to submit your claim, I suggest you do it soon or you will surely forget.

On the 2 metre scene, there has certainly not been any sign of stagnation. Probably the prize for this month's best goes to Harry VK5KZK ever vigilant as usual for his contact with Bernie VK6KJ in Albany on 2 metres on 15th December. Harry goes about things the hard way and has a lot of contacts like this. First he heard VK6VE, the beacon on 144.500 MHz, about 3300, strength rising to 4-5. Harry contacted him, and then he went to 20 metres and who should he find but Bernie VK6KJ, back only one night from an overseas trip. Harry linked up with Bernie and tactically moved down to 2 metres, culminating in a 2-way contact about 0030, signals 5 x 4 rising to 5 x 7, lasting 15 minutes, after which Harry and Bernie both returned to 20 metres on the contact but by the time Harry had finished Bernie was too weak to work. Moral: "You've got to be listening to work 'em!"

Tony VK5ZDY, at Stirling in the Mt. Lofty Ranges, in number 1 DX position in VK5, has been giving a lot of good 21st Dec. contact with a 20 over 9 contact with Bob VK3AOT at Mt. Cowley on 2m. On 22nd, Tony fired an 8 over 3 signal to Harry VK5KZK, and then continued with these bands, Tony had a successful 2-way contact with John VK5QZ and Wally VK5ZVW from the port Phillip, and then to Olympus on the Peninsula during Christmas week on 576 MHz. In between, many contacts to Melbourne and other places. Tony's 2m. operation was a lot of fun, and certainly an interesting reading. He's certainly exploiting his choice locality.

Bob VK3AOT has sent in quite a lot of information concerning his portable activity, and that of general interest has been put together. Operation 10m was several times as one could imagine, so there is one reason for several disappointed portable parties looking for Bob VK3AOT. At present, the 10m band is a plague operation by now, some good early morning contacts were missed. It is to be hoped the latter two weeks of Bob's operating portable will give him a 14 MHz. and a first two. I know Wally VK5ZVW and John VK5QZ, who went out more or less especially to 432 and 576 MHz. to Bob, and I am disappointed missing out the possibility of two-way contacts when the bands were in such good shape around 21st December.

Re Wally VK5ZVW and John VK5QZ v.h.f. and u.h.f. DX position, Cowley, Port Phillip, here are their comments: "Boxing Day 1970 looked good as we left Adelaide in a temperate breeze and despite the 14 MHz. and a first two at Whylla it had reached 107. Just south of Whylla there was a cold south-westerly with a 30 degree temperature drop—we didn't waste any time setting up the antenna. The distance from Adelaide averages around 140 miles and our first contact was at 1830 with VK5CU on 144 MHz. and 1832 with VK5ZVW on 144 MHz. then on, Saturday evening was very busy. Some Adelaide stations were sceptical of our location as signals were too strong for our 100 watt amplifier. At 1900, we were contacted by VK3ZKN, followed by a 432 contact 6.5 given 5/8 received with VK5KQZ at Mt. Gambier. At 2000, we were contacted by VK5ZDY was worked 5/9 on 576, and was the last contact for a very busy first evening.

"The morning of the 27th saw conditions going down fast and our only new contact of note was VK3AYH/F3 at 'Little Desert' National Park near Nulla. From the 27th to the 31st contacts were few, although a public station was made. 30 stations were worked on v.h.f./u.h.f. during the period for a total of 89 contacts. We found later that Bob VK3AOT/F3 at Mt. Cowley was away from his location on the Saturday evening due to equipment troubles—well you can't win them all but it was worth a try."

"Equipment used was 03/12 at 15 watts input on 144 plus an 05/40 amplifier giving up to 100 watts a.m., into a 100 ohm. On 432, 3/20 running 10 watts input to 16 ohm coil-linear and on 576 a 3/20 with 30 watts input to a 32 ohm. expanded array. The power supply was a 1000 v.h.f. 120 v.h.f. battery."

Further news from Bob VK3AOT, VK3 Publicity Officer, indicates Noel VK5GA is operating a beacon nightly between 1800 and 2200 hours on 52.150 MHz. Identification in the form of voice announcement runs continuously. The transmitter is a modified Pyc Mk. 3A running 10 watts to a turnstile antenna. In addition, Noel transmits 40 watts of a.s.b. to a 5 el. yagi on 6 metres and looks for contacts nightly. He listens on the 6m. Halson frequency of 143.9 MHz. on 6 metres nights.

Appropos my advice last month that Ray VK3ATN would have a dish and an extremely large 144 MHz. antenna available for other stations to use, Ray is now experiencing this year. Ray requests some help from interested people to assist in the building, development, and testing of this antenna. Ray says that if you are able to give Ray some help, why not enquire what can be done? Better still, organise a group to do the job properly, and try some E.M.U. as a reward.

Television stations have provided quite a lot of interest to me this year. In the course of my work as a technician repairing the gear of 200 hours of high of high sporadic E activity, tremendous signals have been observed mainly from VK4. On no less than four occasions E stations have been observed on Channel 3 (82 MHz.) with quite good signals, each fading in and out in turn. The stations can be read from the best patterns, indicating they are from Rockingham, Townsville and Darling Downs (exact location unknown). On 28th Dec. Ch. 3 from Rockingham was observed. The signal was equally as good as that of our Ch. 2, only 20 miles away. Signals have been observed on some of the higher locations of the Adelaide Hills, in some cases necessitating service to pacify the customers! All this in addition to numerous signals on Ch. 1 and 6. The DX of this year seems to have gone over the 100 MHz. at times. I personally think next year will see the start of some good 2 metre DX and a probable 100 MHz. and a 100 MHz. to ZL. Best times from past experience seems to be around mid-December to about 26th to 28th. Conditions for 2 metre DX likely to produce signals up to 1,000 miles seem to drop off rapidly after that.

Keep in mind the John Moyle Memorial Field Day Contest for the week-end of 13th and 14th Dec. Details from John Moyle published in "Amateur Radio" in Dec. 1970. Go out portable if you can, if you are unable to go out, let us hear from you and give the portable stations some contacts.

To conclude, here is the thought for the month: "Even the wisest men make fools of themselves at times, and even the fools are sometimes wise." Until next month, plenty of DX. 73, Eric VK5LP, The Voice in the Hills.



VK2 FIELD DAYS AND ACTIVITIES FOR 1971

- Feb. 21—Central Coast Field Day at Gosford.
- Feb. 28—Area 5 Get-together at Lockhart. Details from Harry VK2AEC.
- Mar. 13/14—Area 2 Dinner-Field Day at Scone. Details from Max VK2BMK.
- Mar. 21—Annual General Meeting of the VK2 Division.
- Mar. 27—Annual Dinner. Details from Admin. Secretary.
- Mar. 28—Annual Divisional Field Day at VK-21, Quarry Road, Rural.
- Easter—Annual Convention, Field Day at Canberra. Details from VK1ACA—C.R.S.
- Easter—Annual Convention at Urunga. Details from anyone on the North Coast.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

DO YOU PLAY CHESS?

Editor "A.R.," Dear Sir,

Subsequent to a QSO with LUZEB, I received a letter from him, asking whether I would play chess with him by correspondence.

As I regretably have never learned the game, it is not in my power to oblige him. It has occurred to me, however, that there must be quite a few VK or ZL players to whom this would be of considerable interest.

He is able to write in English, and his full address is: A. Monsalvo (LUZEB), Calle 19, No. 768, Mercedes (B.A.), Argentina.

His signal into Australia is 7 MHz, is a good one. Perhaps this letter will help to achieve what he desires.

—N. A. Loffman, VK2APL.

NOVICE LICENSING

Editor "A.R.," Dear Sir,

The N.S.W. Divisional Council has been requested by F.E. to convene a committee to consider and to make recommendations on the subject of Novice Licensing. At the 1970 Federal Convention the matter of this form of licensing was raised and discussed and when a vote was taken it appears that a deadlock resulted, Tasmania, Queensland and Victoria voting against, and New South Wales, South Australia and Western Australia voting in favour of the introduction of Novice Licences. However, the majority was not permitted to lapse entirely and F.E. wishes to have a reasoned statement with arguments FOR and AGAINST, so this matter may be discussed further at the 1971 Eastern Convention.

As your readers are aware, the subject has been ventilated in the pages of "Amateur Radio" and elsewhere, so various arguments are available for the new committee's consideration. However, it is felt that the Amateurs who have definite opinions pro or contra should have a further opportunity to express their opinions and to submit rational arguments to support their points of view. Accordingly, I should be very grateful to any Institute members who are willing to submit their ideas in writing—no matter how roughly presented. The committee would not be interested in mere statements but would be able to accept reasoned arguments which would be used and quoted in the projected submission to F.E.

Especially we would be interested in information gained by Amateur operators who make frequent contacts with stations in U.S.A., Japan, U.S.S.R., Israel, India and other countries where low-level licensing exists. The opinion of DX operators in these areas is sought regarding the value of Novice Licensing, its contribution to the development of Amateur Radio in these countries. The difficulties which may have arisen with Novice operators, the proportion of Novices who progress to Full licence standard, the operating standards of such operators, the extent to which undue interference is caused to other Amateurs and other services, problems caused in t.v.i. and

b.e.i. by Novice operators; in short, we can use any relevant information that can assist in assessing the need for such a system in Australia.

Various Institute members have visited other countries and have, no doubt, seen some evidence of Novice activities. Any valuable information would be useful if based upon personal observation and/or discussion with responsible members of the Amateur movements with constructive ideas and the capacity to make intelligent assessments.

It is felt that useful information could be gained from Amateurs who have or are now engaged in instruction of A.O.C.P. students. Some Divisions conduct A.O.C.P. courses for evening students and by correspondence and useful data could be obtained if we could find out the numbers of students over several years, the numbers who completed the courses and passed, the numbers who dropped out before completion. Also, such instructors would be able to assess the value of lower-level licensing as a supplement to their courses, working on the assumption that Novice-type licences are not regarded as ends in themselves but are merely steps towards the Full A.O.C.P.

I have suggested that we should not slavishly follow the American terminology and use the designation "Novice Licence" when referring to the level of question. Surely we are capable of devising a title which is more distinctive and Australian in concept. The terms "Restricted", "Conditional", "Provisional", "Temporary", "Instructional", "Beginners", and "Learners" are some possibilities, and members are invited to state which term they prefer and reasons for such preference.

At this stage I feel that the following persons could make good use of the form of licensing:

1. Students in A.O.C.P. courses conducted by (a) State Divisions of the Institute, and (b) District Radio Clubs offering such training.
2. Members of Youth Radio Clubs who progress to stage 2 of the A.O.C.P. series but would be able to get on the air under supervised conditions in terms of "Restricted" licences.
3. Students of government, semi-government and private radio schools which could supplement their courses by "Restricted" licensing.
4. Holders of Limited licences who wish to improve their Morse Code speeds by on-the-air practice, but not to reach the 10 w.p.m. required for Full A.O.C.P. status.

Members are invited to suggest extensions to this list.

It is realised, of course, that many Amateurs are not interested in the field of instruction of potential Amateurs, are not at all perturbed by the need to use our bands to our advantage, are concerned only with their own operating activities in fields of DX or v.h.f. or local rag-chewing and so on. In short, a considerable proportion of the Amateur movement will be quite apathetic towards the concept of a lower-level transmitting licence. However, there are some who have been concerned with training others, who have contributed to the expansion of Institute membership, who realise the need to utilise our bands judiciously to prevent non-Amateur interests from encroaching and demanding further slices of the lower-level transmitting licence. It is the fact that Amateurs are barred from transmitting privileges which are regarded as normal in many developed countries—in short, who can see that "Restricted" (lower-level) licensing offers a means whereby more people can be attracted to Amateur transmitting as a hobby for self-satisfaction and as a contribution to the public interest.

PLEASE give this matter some thought and discussion and submit your suggestions and ideas as soon as possible.

—R. C. Black, VK3YA.

SILENT KEYS

It is with deep regret that we record the passing of—

VK2ALX—Don Kirby,

VK2ANF—John Miller,

VK7RN—Roy D. Nicholls

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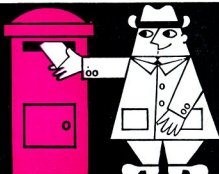
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